

REMARKS

Claims 1-2 and 3-18 are pending.

Claims 1-2 and 3-18 are rejected.

Claim 1 and 2 are amended.

Applicants have amended claims 1 and 2 to require 10 % - 60 % by weight of the compound of formula (1). Further Applicants have amended the claim to require that the formulation is aqueous.

Support is found on page 6, line 1, page 14, line 3 and in examples 1 and 2.

No new matter is added.

35 USC 112, First Paragraph

Claims 1-2, and 3-18 are rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement.

Applicants have amended to limit the weight % component a) to 10-60 wt.% percent. Applicants aver that this amendment overcomes the above rejection.

35 USC 103(a)

Claims 1-18 are rejected under 35 USC 103(a) as being obvious in light of Petrin et al., US 5,057,236 in view of Brouwer, US 5,714,450.

Examiner believes Petrin to teach storage stable brighteners of the class phenyl-, triazinyl stilbenes present in hypochlorite bleach-compatible surface-active ion pair fluorescent whitener compositions ranging in amounts from 0.001-5%. The preferable ranges are considerably lower and range from about 0.01% to about 1.0% and 0.01 to about 0.5%. See col. 7, lines 3-6.

Examiner agrees that Petrin does not teach the claimed range of fluorescent whitening agents. However, Examiner alleges that Brouwer teach a detergent composition with similar FWAs in detergent concentrations of 1-90%, wherein the ratio of surfactant/whitener is from 5:1 to 2:1. The Examiner opines that this renders the claimed whitener's concentration range obvious. Applicants

point out that the range 1-90% refers to a detergent surfactant (see claim 1) not a whitener and the ratio of surfactant to whitener refers to a nonionic surfactant. Nonionic surfactants are not anionic polysaccharides as the present claims require.

The Applicants respectfully traverse the rejection above for the reasons presented below.

The present claim 1 upon which all other claims depend requires

A storage-stable fluorescent whitener formulation comprising

- (a) 10-60 % by weight, based on the total weight of the whitener formulation, of at least one compound of formula (1),
- (b) 0.01 – 1% by weight, based on the total weight of the whitener formulation, of at least one anionic polysaccharide,
- optional components (c), (d), (e), (f) and
- water to make up 100% by weight.

Applicants have discovered that by selecting the particular fluorescent whiteners of formula (1) and combining with 0.01 to 1% anionic polysaccharide, it is possible to form highly concentrated aqueous storage stable whitener formulations. The advantages of such concentrated solutions are clear- savings in transportation costs, predictable high concentration of fluorescent whiteners without precipitation, pumpable highly concentrated fluorescent whiteners and avoidance of the dusting of dry solid.

Prior Art

Petrin is directed to optical brightener formulations which can be made hypochlorite bleach resistant. The whitener is transformed into a neutral ion-pair with a surface active quaternary ammonium ion-producing compound. See abstract. Petrin teaches that optical brighteners are known in some instances to be quickly and irreversibly decomposed in the presence of sodium hypochlorite bleach, even at concentrations well below 200 ppm sodium hypochlorite. See col. 1, lines 54-58.

Petrin further teaches that the stabilized compositions (transformed neutral ion pair with a surface active quaternary ammonium ion-producing compound) range in concentration in hypochlorite bleach from about 0.001% to about 5.0%. See col. 3, lines 60-61. Furthermore, Petrin's preferable

levels range from about 0.01% to about 1.0% and most preferably from about 0.01% to about 0.5%. See col. 7, lines 3-6.

Petrin also explains that most ion pairs were found to be white crystalline solids and had low solubilities in water. See col. 9, lines 1-5.

Petrin further discloses that the systems (ions-pairs with bleach) had poor physical stability and tended to settle quickly. See col. 13, lines 54-56.

Thus the disclosure of Petrin as a whole teaches that the ion-pairs while bleach stable at low concentrations of 0.001 to 5.0 wt. % have low solubility in water and have poor physical stability and tend to settle quickly. This would lead one skilled in the art to assume that the ion-pairs taught in Petrin would not be good candidates for aqueous whitener formulations ranging from 10 to 60 wt. %. Additionally, Petrin's disclosures considered as a whole would lead one skilled in the art to conclude that such high concentrations would be unstable and quickly precipitate.

Examiner has relied on Brouwer to provide a teaching of the claimed ranges for component (a). Examiner also alleges that Brouwer teaches similar whiteners as presently claimed.

The teachings of Brouwer drawn upon by the Examiner for a teaching of "similar whiteners" are found in col. 23, lines 10-12 which is a generic reference to diaminostilbnesulfonic acid-cyanuric chlorides. The claimed ranges for component (a) referenced by the Examiner for the whitener and surfactant is found in col. 24, lines 65-67. This range indicated by the Examiner, refers to discrete whitening agent particles. These particles are a ratio of surfactant to whitener from about 2:1 to about 5:1 such that the particle reduces degradation of the whitener present in an amount up to about 30% by weight such that the ratio of nonionic detergent surfactant to whitening agent particles is from about 2:1 to about 40:1. See col. 24, lines 65-67 but continued onto col. 25, lines 1-4.

Brouwer teaches powder detergent containing discrete whitening agent particles. See col. 1, lines 5-6. Brouwer discloses that FWAs when incorporated within powdered detergents, the FWAs will often cause deterioration in the bulk appearance of the powdered detergent by turning yellow or greenish color. See col. 1, lines 15-20. Brouwer addresses this problem by forming a whitening agent such that it is in the form of a discrete particle. See col. 1, lines 5-53. Brouwer teaches that the powder laundry detergent may comprise up to about 30%, preferably up to about 15%, and more

preferably up to about 5% of discrete whitening agent particles wherein the whitening agent particles comprise a whitener and a surfactant.

Thus Brouwer is directed to powdered detergents only. The concentrations forming the basis of the rejection, refer to powdered detergents which contain a discrete particle which particle comprises a whitener and a surfactant. There is no mention whatsoever within Brouwer as to concentrations of optical brighteners in aqueous formulations of any kind.

Differences Between the Prior Art and the Present Claims

- Petrin teaches the ion-pairs which are not likely to be water soluble nor are they likely to form stable concentrated aqueous solutions. These teachings indicate the unobviousness of the present claims. One skilled in the art would assume that high concentrations of the ion-pairs in aqueous formulations within Petrin would not be possible. The examples of Petrin do not exceed 1000 ppm.
- The Examiner looks to Brouwer for reliance upon formulations that teach detergent powder formulations incorporating whiteners at high levels (levels within the present claim limitations).
- However, Brouwer teaches formulations of detergent powders. The detergent powders of Brouwer are taught to contain whitener/surfactant particles up to 30%. This teaching can in no way encourage the use of whiteners at such high concentrations in aqueous formulations as the teachings disclose only powdered formulations.
- The ratio of surfactant to whitener within the particle claimed by Brouwer is 2:1 to about 5:1 and the Examiner believes this to make the present fluorescent whitener concentration range obvious. Applicants respectfully submit, that the 1:1 to about 5:1 concentration to which the Examiner refers, refers to a particle not a solution and that the surfactant to which the reference is made is a nonionic surfactant not encompassed by the present claim limitations. The 1-90 wt. % the Examiner refers to does not refer to the whitener but to the surfactant. See claim 1.
- There is no apparent reason why one skilled in the art would look to Brouwer's teachings of whitener particles in detergent powders and assume that the concentrations that work in a powder could be applied to the ion-pairs of Petrin which show little solubility in water and form unstable concentrated aqueous formulations. There must be a clearly articulated reason why this combination makes sense by the Office.

- Respectfully, it appears that this is hindsight analysis on the part of the Office. It is insufficient to select from the prior art the separate components of the inventor's combination, using the blueprint supplied by the inventor. The prior art must suggest to one of ordinary skill in the art the desirability of the claimed combination. This rejection fails to do this. The Examiner reasons that it would be obvious to utilize a higher concentration of fluorescent whiteners with the motivation of enhancing the whitening efficacy of the cleaning composition as evidenced by Brouwer. See page 4, last Office Action. However, given the teachings of the cited references (low stability and water solubility of ion-pairs of Petrin and Brouwer teachings which apply only to powders) one skilled in the art would not have any expectation of success.

Reconsideration and withdrawal of the rejection of claims 1-2 and 4-18 is respectfully solicited in light of the remarks and amendments *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims 1-2 and 4-18 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,

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